Parflange ECO 25

Hydraulic Flanging and Flaring Tool

Bulletin 4390 - ECO25 June 2015

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Features and Advantages

Easy to Operate

The ECO 25 is capable of flanging or flaring steel and stainless tubing with a few simple operations. And since each die has flanging tooling on one side and flaring tooling on the other, you only need one die to perform both functions. In addition, because of its adjustable tube stop, the ECO 25 does not require a different die for each wall thickness of tubing – just one die for each tube outside diameter.

Portable

The ECO 25 has handles on three sides of the machine, making moving it around the workplace an easy task. It can either be set on its rubber feet or, for a more permanent location, bolted to a work bench or cart.

90˚ Flanging

The ECO 25 is capable of completing 90° flanges on steel and stainless steel tubing from ¼" through 1½" outside diameters for use with O-ring Face Seal tube fittings, such as Parker Seal-Lok™.

37˚ Flaring

The ECO 25 is capable of completing 37° flares on steel and stainless steel tubing from ¼" through 1½" outside diameters for use with JIC 37˚ flared tube fittings, such as Parker Triple-Lok®.

Hydraulic Pump

The ECO 25 is easily operated using a hand hydraulic pump, allowing it to be utilized virtually anywhere.

Hand Pump

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ECO 25 Specifications

Height	20.5 in. (520 mm)
Width	15 in. (381 mm)
Depth	20.5 in. (520 mm)
Weight	190 lbs. (86.4 kg)
Electrical Requirements	110 Volt, 1 phase, 60Hz/20A
Motor	1.5 HP
Maximum Pump Flow	20 $in.^3$/min.
Max. # Flares/Flanges per day	50
Capacity (90° Flanging)	
Steel Tubing	1 1/2" O.D. x .120 Wall (38mm O.D. x 4mm Wall)
Stainless Steel Tubing	1 1/2" O.D. x .120 Wall (38mm O.D. x 4mm Wall)
Capacity (37° Flaring)	
Steel Tubing	1 1/2" O.D. x .120 Wall (38mm O.D. x 4mm Wall)
Stainless Steel Tubing	1 1/2" O.D. x .120 Wall (38mm O.D. x 4mm Wall)

Setup Instructions

Step 1: ECO 25 Adapter

Ensure the ECO 25 Adapter (part number 6 F5OLO-S) is properly installed into the SAE straight thread port in the rear of the ECO 25 cylinder.

Step 2: Hydraulic Pump Tee

Install the Hydraulic Pump Adapter (part number 6-6 FLO-S) into the NPT pipe thread port in the rear of the hand-hydraulic pump with a pipe thread sealant. Assemble the swivel end of the Hydraulic Pump Tee (part number 6 R6LO-S) to the Hydraulic Pump Adapter. Make sure the branch end of the Tee is oriented upward.

Step 3: Pressure Gauge Adapter

Assemble the Pressure Gauge Adapter (part number 6 G6L-S) onto the NPT Pipe Thread end of the pressure gauge (part number 900044) with a pipe thread sealant.

Step 4: Pressure Gauge

Assemble the Pressure Gauge and Adapter assembly onto the branch end of the Hydraulic Pump Tee (part number 6 R6LO-S). Make sure to orient the front of the gauge toward the front of the ECO 25 so it may be seen during operation.

Step 5: Hose Conversion Adapters

Install Hose Conversion Adapter #1 (part number 6 G6L-S) onto the 1/4" male NPT threaded end (smaller end) of the Hose Assembly (part number 910133) using a pipe thread sealant. Then, install Hose Conversion Adapter #2 (part number 6-6 G6L-S) onto the 3/8" male NPT end (larger end) of the Hose Assembly using a pipe thread sealant..

Step 6: Hose to Pump Tee Assembly

Assemble the swivel end of the Hose Conversion Adapter #2 (part number 6-6 G6L-S) to the remaining end of the Hydraulic Pump Tee (part number 6 R6LO-S).

Step 7: Hose to ECO 25 Assembly

Assemble the swivel end of Hose Conversion Adapter #1 (part number 6 G6L-S) to the ECO 25 Adapter (part number 6 F5OLO-S).

Step 8: Check for Leaks

Assuring all connections are properly tightened, operate the hydraulic pump and check for leaks.

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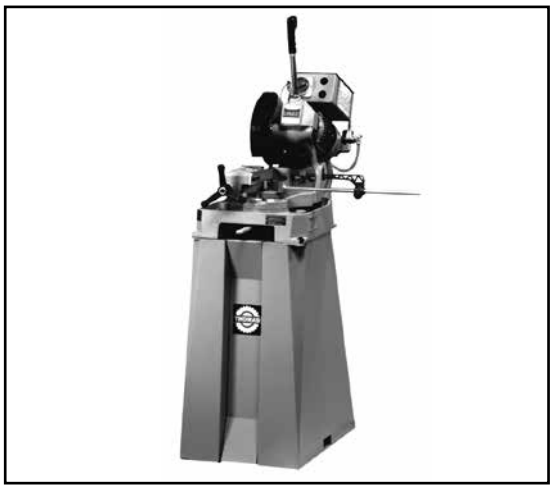
Tube End Preparation

Tube end preparation is one of the most critical processes in obtaining an optimum seal of a flanged or flared tube end connection. Regardless of the tube material, similar guidelines for tube cut-off, deburring, and cleanliness can help assure the tube to fitting connection remains leak free.



Tube Cutting

- It is critical that the tube be cut squarely within +/- 1° in order to assure the proper tube to fitting connection. A tube end which is not cut squarely may result in a flange or flare which is not circular, potentially causing leakage.
- When cutting tube in preparation for flanging or flaring, a saw which utilizes a toothed blade is recommended. This type of tool will assure that the tube end is not hardened from excessive heat or cold working of material.
  - ❍ Recommended
    - ■ Low speed Circular Saw, Hacksaw
  - ❍ Not Recommended
    - ■ Rotary Tube Cutter, Abrasive Saw

Tube Deburring

- Deburring the inside and outside diameter of the tube end is necessary to assure the tube fits properly inside the flange or flare sleeve. In addition, proper deburring of the tube end is necessary to form a flanged or flared tube end which is free of imperfections that may create a leak path between the tube and fitting.

Samples of improper and proper cuts on steel tube

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90˚ Flanging Information for Seal-Lok Fittings

Flanging Die Set, Inch Sizes

Tube O.D. (in.)	Die Set Part Number
1/4	M2504
3/8	M2506
1/2	M2508
5/8	M2510
3/4	M2512
1	M2516
1 1/4	M2520
1 1/2	M2524

Flanging Pin, Inch Sizes

Tube O.D. (in.)	Wall Thickness (in.)	Flanging Pin Steel Tube	Flanging Pin Stainless Tube
1/4	0.028	B4004X028180	-
1/4	0.035	B4004X035180	B4004X035180SS
1/4	0.049	B4004X049180	B4004X049180SS
3/8	0.035	B4006X035180	B4006X035180SS
3/8	0.049	B4006X049180	B4006X049180SS
3/8	0.065	B4006X065180	B4006X065180SS
1/2	0.035	B4008X035180	B4008X035180SS
1/2	0.049	B4008X049180	B4008X049180SS
1/2	0.065	B4008X065180	B4008X065180SS
1/2	0.083	B4008X083180	B4008X083180SS
1/2	0.095	B4008X095181	B4008X095180SS
5/8	0.049	B4010X049180	B4010X049180SS
5/8	0.065	B4010X065180	B4010X065180SS
5/8	0.083	B4010X083180	B4010X083180SS
5/8	0.095	B4010X095180	B4010X095180SS
5/8	0.120	B4010X120180	-
3/4	0.049	B4012X049180	B4012X049180SS
3/4	0.065	B4012X065180	B4012X065180SS
3/4	0.083	B4012X083180	B4012X083180SS
3/4	0.095	B4012X095180	B4012X095180SS
3/4	0.109	B4012X109180	B4012X109180SS
3/4	0.120	B4012X120180	B4012X120180SS
1	0.065	B4016X065180	B4016X065180SS
1	0.083	B4016X083180	B4016X083180SS
1	0.095	B4016X095180	B4016X095180SS
1	0.109	B4016X109180	B4016X109180SS
1	0.120	B4016X120180	B4016X120180SS
1	0.134	B4016X134180	
1 1/4	0.065	B4020X065180	-
1 1/4	0.083	B4020X083180	B4020X083180SS
1 1/4	0.095	B4020X095180	B4020X095180SS
1 1/4	0.109	B4020X109180	B4020X109180SS
1 1/4	0.120	B4020X120180	B4020X120180SS
1 1/4	0.134	B4020X134180	-
1 1/2	0.065	B4024X065180	-
1 1/2	0.083	B4024X083180	-
1 1/2	0.095	B4024X095180	B4024X095180SS
1 1/2	0.109	B4024X109180	B4024X109180SS
1 1/2	0.120	B4024X120180	B4024X120180SS

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90˚ Flanging Information for Seal-Lok Fittings

Parflange ECO 25 Dial Settings and Pressures for 90˚ Flanging

		Steel Tube			Stainless Steel Tube		
Tube O.D. (in.)	**Wall Thickness** (in.)	**Tube Stop Setting**	**Head Stop Setting**	**Flanging Pressure** (psi)	**Tube Stop Setting**	**Head Stop Setting**	**Flanging Pressure** (psi)
1/4	0.028	0088	0199	1000	-	-	-
1/4	0.035	0086	0196	1000	0086	0201	2000
1/4	0.049	0077	0198	1500	0075	0208	3000
3/8	0.035	0095	0200	1000	0082	0205	2500
3/8	0.049	0089	0202	1600	0084	0206	2500
3/8	0.065	0082	0201	2000	0082	0206	3000
1/2	0.035	0099	0203	1000	0098	0202	2000
1/2	0.049	0094	0195	1500	0094	0198	3000
1/2	0.065	0093	0204	1600	0088	0205	3500
1/2	0.083	0088	0204	2000	0078	0201	3600
1/2	0.095	0079	0204	2200	0073	0200	3600
5/8	0.049	0088	0195	1600	0078	0198	3000
5/8	0.065	0083	0200	2000	0078	0201	3000
5/8	0.083	0075	0199	2600	0072	0208	5000
5/8	0.095	0071	0197	2000	0066	0206	5000
5/8	0.120	0068	0208	4800	-	-	-
3/4	0.049	0081	0197	1500	0077	0202	4600
3/4	0.065	0075	0200	2000	0067	0206	5600
3/4	0.083	0075	0202	3000	0064	0200	5000
3/4	0.095	0064	0200	3000	0059	0203	5000
3/4	0.109	0059	0199	3000	0045	0203	6000
3/4	0.120	0055	0198	3000	0050	0203	6500
1	0.065	0074	0196	3000	0065	0200	4500
1	0.083	0072	0198	3000	0063	0204	5000
1	0.095	0064	0199	3200	0064	0199	5500
1	0.109	0059	0201	3400	0047	0201	6500
1	0.120	0055	0200	4000	0045	0201	6500
1	0.134	0050	0201	4500	-	-	-
1 1/4	0.065	0081	0194	3600	-	-	-
1 1/4	0.083	0075	0199	4000	0063	0203	6500
1 1/4	0.095	0072	0199	4000	0062	0202	6000
1 1/4	0.109	0067	0196	4000	0058	0201	6000
1 1/4	0.120	0064	0199	4800	0045	0198	6500
1 1/4	0.134	0059	0200	5000	-	-	-
1 1/2	0.065	0070	0192	2000	-	-	-
1 1/2	0.083	0065	0196	3600	-	-	-
1 1/2	0.095	0061	0197	4600	0031	0190	6500
1 1/2	0.109	0056	0194	4600	0044	0192	6500
1 1/2	0.120	0053	0198	5000	0038	0187	6000

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90˚ Flanging Information for Seal-Lok Fittings

Components Required

- Dual-Function Flare/Flange Die Set (contains tooling for both Flanging and Flaring)
  - ❍ See chart page 7
- Flanging Pin specific to Tube O.D., Wall Thickness, and Tube Material
  - ❍ See chart page 7
- LB-2000 Lubricant

Dual Function Die Set

Flanging Pin

LB-2000 Lubricant

ECO 25 Operating Instructions for 90˚ Flanging for Seal-Lok FIttings

Step 1: Measure the tube O.D. and wall thickness for proper die and pin selection.

Step 2: Select the die set and flanging pin matching the tube O.D., wall thickness and material of your tube from the charts on page 7. The die set is stamped with the tube O.D. and the pin is stamped with both the tube O.D. and wall thickness (and material if flanging stainless steel tube).

Step 3: Open the swing arm to expose die cavity and main spindle head.

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90˚ Flanging Information for Seal-Lok Fittings

Step 4: Raise the tube stop and install the flanging pin into the main spindle head of the machine. Be sure to lower the tube stop to its original position after inserting the pin.

Step 5: Using the LB-2000 lubricant, adequately lubricate the flanging pin as well as the inside diameter of the tube end. **It is very important to lubricate the Flanging Pin and Inside Diameter of the tube end prior to each flanging operation.**

Step 6: Insert the bottom half of the die set (either die half can be used) into the die cavity of the machine using the keyways on either side to secure the die. **Ensure that the 90° Flange side of the die half is facing toward the main spindle head of the machine (away from the operator).**

Step 7: Place a Parflange mechanical sleeve (part number TPL) onto the end of the tube with the widest part of the sleeve facing the end of the tube you intend to flange. Place the sleeve and tube assembly into the bottom half of the die set, ensuring the Parflange sleeve is placed into the corresponding cavity in the die half.

Step 8: Insert the top half of the die set into the die cavity on top of the other half, also ensuring that the 90° Flange side of the die half is facing toward the main spindle head of the machine.

Step 9: Set Tube Stop adjustment dial to recommended value for flanging the O.D., wall thickness and material of the tubing you are using (See Chart on page 8). Dial settings are recommendations only and may require adjustment to obtain desired results.

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90˚ Flanging Information for Seal-Lok Fittings

Step 10: Set Head Stop adjustment dial to recommended value for flanging the O.D., wall thickness and material of the tubing you are using (See Chart on page 8). Dial settings are recommendations only and may require adjustment to obtain desired results.

Step 11: Close swing arm against shoulder bolt.

Step 12: While keeping tube end against tube stop, rotate clamp vise arm clockwise and securely clamp tube in die set. Be sure to properly support long tubes during the clamping and flanging process.

Step 13: Obtain the recommended flanging pressure for the O.D., wall thickness, and tube material you are using from the chart on page 8.

Step 14: Press and release green start button on front of machine to start rotation of main spindle head. If head does not rotate upon activation of motor, check electrical connections and retry. Be sure to use an electrical outlet with 110V/20A power.

Step 15: Ensure the tube is held in position and slowly actuate the hydraulic hand pump. The flanging pin will come forward and the tube stop will automatically rise up and away from the tube. The pressure gauge will show a rapid rise in pressure as the pin engages the tube end and flanges the tube.

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90˚ Flanging Information for Seal-Lok Fittings

Step 16: When the pressure gauge reaches the recommended flanging pressure from Step 13, de-energize the hydraulic power supply. This will allow the flanging pin and spindle head to retract to their original position.

Step 17: Press the red stop button on the front of the machine to stop rotation of the main spindle head.

Step 18: Rotate clamp vise handle counter-clockwise to loosen clamp from die set and tube and open swing arm to expose die halves.

Step 19: Remove the top half of the die set from the die cavity and set aside.

Step 20: Remove flanged tube from bottom half of die.

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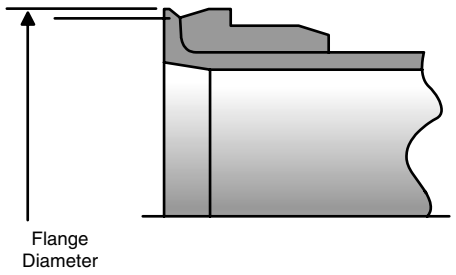
90˚ Flanging Information for Seal-Lok Fittings

Step 21: Inspect flange to ensure proper surface finish. Measure the flange diameter and compare to values in chart below.



Adjusting the ECO 25 to compensate for over/undersized flange diameters

If the flange diameter of your ECO 25 tube assembly is not within the diameter specifications listed, please complete the following steps:

- First, check to make sure that the correct flanging pin and die set are being used for the outside diameter, wall thickness, and material tubing you are using. Keep in mind that each Die Set can be used with every wall thickness of that size tubing and also with both carbon and stainless steel tubing. However, the flanging pins are specific to the outside diameter, wall thickness, and material of the tubing.
- Once the tooling and tubing have been verified, the correct method of increasing or decreasing the diameter of the tube flange is to alter the **Head Stop** adjustment dial (do not change the Tube Stop adjustment dial setting).
- To increase the diameter of a tube flange, adjust the Head Stop adjustment dial **Clockwise** (dial setting number will increase) a small amount and repeat the flanging process. If the desired result is not achieved, repeat adjustment process as needed until the proper sized flange is made.
- To decrease the diameter of a tube flange, adjust the Head Stop adjustment dial **Counter Clockwise** (dial setting number will decrease) a small amount and repeat the flanging process. If the desired result is not achieved, repeat adjustment process as needed until the proper sized flange is made.

Inch Tube O.D. (in.)	**Metric Tube O.D.** (mm)	**Flange Diameter** (in.)
1/4	6	.478 / .502
3/8	10	.594 / .620
1/2	12	.719 / .745
5/8	14, 15, 16	.875 / .923
3/4	18, 20	1.048 / 1.097
1	22, 25	1.298 / 1.347
1-1/4	28, 30, 32	1.549 / 1.597
1-1/2	38	1.861 / 1.910

90˚ Flange dimensions

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37˚ Flaring Information for Triple-Lok Fittings

Flaring Die Sets, Inch Sizes

Fitting Dash Size	Tube O.D. (in.)	Die Set Part Number
4	1/4	M2504
6	3/8	M2506
8	1/2	M2508
10	5/8	M2510
12	3/4	M2512
16	1	M2516
20	1 1/4	M2520
24	1 1/2	M2524

Flaring Pins, Inch Sizes

Tube O.D. (in.)	Wall Thickness (in.)	Flaring Pin Part Number
1/4	0.028	B4004X028074
1/4	0.035	B4004X035074
1/4	0.049	B4004X049074
3/8	0.035	B4006X035074
3/8	0.049	B4006X049074
3/8	0.065	B4006X065074
1/2	0.035	B4008X035074
1/2	0.049	B4008X049074
1/2	0.065	B4008X065074
1/2	0.083	B4008X083074
5/8	0.049	B4010X049074
5/8	0.065	B4010X065074
5/8	0.083	B4010X083074
5/8	0.095	B4010X095074
3/4	0.049	B4012X049074
3/4	0.065	B4012X065074
3/4	0.083	B4012X083074
3/4	0.095	B4012X095074
3/4	0.109	B4012X109074
1	0.065	B4016X065074
1	0.083	B4016X083074
1	0.095	B4016X095074
1	0.109	B4016X109074
1	0.120	B4016X120074
1 1/4	0.065	B4020X065074
1 1/4	0.083	B4020X083074
1 1/4	0.095	B4020X095074
1 1/4	0.109	B4020X109074
1 1/4	0.120	B4020X120074
1 1/2	0.065	B4024X065074
1 1/2	0.083	B4024X083074
1 1/2	0.095	B4024X095074
1 1/2	0.109	B4024X109074
1 1/2	0.120	B4024X120074

Note: Tooling suitable for 37˚ flaring of steel and stainless steel tube materials. One die covers each tube O.D., but a different pin is required for each tube wall thickness.

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37˚ Flaring Information for Triple-Lok Fittings

Parflange ECO 25 Dial Settings and Pressures for 37˚ Flaring

Tube O.D. (in.)	Wall Thickness (in.)	Steel Tube			Stainless Steel Tube		
		Tube Stop Setting	Head Stop Setting	Flaring Pressure (psi)	Tube Stop Setting	Head Stop Setting	Flaring Pressure (psi)
1/4	0.028	0150	0275	1000	0150	0275	1000
1/4	0.035	0150	0275	1000	0150	0275	1000
1/4	0.049	0150	0275	1000	0150	0275	1500
3/8	0.035	0150	0275	1000	0150	0275	1000
3/8	0.049	0150	0275	1000	0150	0275	1500
3/8	0.065	0150	0275	1000	0150	0275	1500
1/2	0.035	0150	0275	1000	0150	0275	1500
1/2	0.049	0150	0275	1000	0150	0275	1500
1/2	0.065	0150	0275	1000	0150	0275	1500
1/2	0.083	0150	0275	1000	0150	0275	1500
5/8	0.049	0150	0275	1000	0150	0275	1500
5/8	0.065	0150	0275	1500	0150	0275	2000
5/8	0.083	0150	0275	2000	0150	0275	2000
5/8	0.095	0150	0275	2000	0150	0275	2500
3/4	0.049	0150	0275	1000	0150	0275	1500
3/4	0.065	0150	0275	1500	0150	0275	2000
3/4	0.083	0150	0275	2000	0150	0275	2000
3/4	0.095	0150	0275	2000	0150	0275	2500
3/4	0.109	0150	0275	2000	0150	0275	2500
1	0.065	0150	0275	1500	0150	0275	2000
1	0.083	0150	0275	1500	0150	0275	2000
1	0.095	0150	0275	1500	0150	0275	2500
1	0.109	0150	0275	2000	0150	0275	3500
1	0.120	0150	0275	3000	0150	0275	4000
1 1/4	0.065	0150	0275	2500	0150	0275	2500
1 1/4	0.083	0150	0275	2500	0150	0275	3000
1 1/4	0.095	0150	0275	3000	0150	0275	3500
1 1/4	0.109	0150	0275	3000	0150	0275	3500
1 1/4	0.120	0150	0275	3500	0150	0275	3500
1 1/2	0.065	0150	0275	2000	0150	0275	2000
1 1/2	0.083	0150	0275	2000	0150	0275	2000
1 1/2	0.095	0150	0275	2000	0150	0275	2500
1 1/2	0.109	0150	0275	2500	0150	0275	3000
1 1/2	0.120	0150	0275	2500	0150	0275	3000

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37˚ Flaring Information for Triple-Lok Fittings

Components Required

- Dual-Function Flare/Flange Die Set (contains tooling for both Flanging and Flaring)
  - ❍ See chart page 14
- Flaring Pin specific to Tube O.D. and Wall Thickness
  - ❍ See chart page 14
- LB-2000 Lubricant

Dual Function Die Set

Flaring Pin

LB-2000 Lubricant

ECO 25 Operating Instructions for 37˚ Flaring for Triple-Lok FIttings

Step 1: Measure the tube O.D. and wall thickness for proper die and pin selection.

Step 2: Select the die set and flaring pin matching the tube O.D. and wall thickness of your tube from the chart on page 7. The die set is stamped with the tube O.D. and the pin is stamped with both the tube O.D. and wall thickness.

Step 3: Open the swing arm to expose die cavity and main spindle head.

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37˚ Flaring Information for Triple-Lok Fittings

Step 4: Raise the tube stop and install the flaring pin into the main spindle head of the machine. Be sure to lower the tube stop to its original position after inserting the pin.

Step 5: Using the LB-2000 lubricant, adequately lubricate the flaring pin as well as the inside diameter of the tube end. **It is very important to lubricate the Flaring Pin and Inside Diameter of the tube end prior to each flaring operation.**

Step 6: Insert the bottom half of the die set (either die half can be used) into the die cavity of the machine using the keyways on either side to secure the die. **Ensure that the 37° Flare side of the die half is facing toward the main spindle head of the machine (away from the operator).**

Step 7: Insert the top half of the die set into the die cavity on top of the other half, also ensuring that the 37° Flare side of the die half is facing toward the main spindle head of the machine.

Step 8: Rotate the Tube Stop adjustment dial clockwise until it cannot be adjusted any further (dial should read approximately 0150). At this point, the tube stop should be in contact with the back side of the die set, but please ensure it is not pressing against the die set too tightly, as this can damage the machine. The aim is to line up the tube end flush with the back side of the die set. This process will be the same for every size and wall thickness of tubing used.

Step 9: Rotate the Head Stop adjustment dial clockwise until it cannot be adjusted any further (dial should read approximately 0275 but it may be slightly higher or lower). The aim is to get the head stop out of the way of the spindle head travel, as it is not necessary for the flaring process. This process will be the same for every size and wall thickness of tubing used.

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Step 10: Insert the tube through the die set until it touches the tube stop. You may have to raise the upper die half slightly to allow the tube to fully insert through the die set.

Step 11: Close swing arm against shoulder bolt.

Step 12: While keeping the tube end against the tube stop, rotate clamp vise arm clockwise and securely clamp tube in die set. Be sure to properly support long tubes during the clamping and flaring process.

Step 13: Obtain the recommended flaring pressure for the O.D., wall thickness, and tube material you are using from the chart on page 15.

Step 14: Press and release green start button on front of machine to start rotation of main spindle head. If head does not rotate upon activation of motor, check electrical connections and retry. Be sure to use an electrical socket with 110V/20A power.

Step 15: Ensure the tube is held in position and energize the hydraulic power supply. The flaring pin will come forward and the tube stop will automatically rise up and away from the tube end. The pressure gauge will show a rapid rise as the pin engages the tube end and flares the tube.

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37˚ Flaring Information for Triple-Lok Fittings

Step 16: When the pressure gauge reaches the recommended flaring pressure from Step 13, de-energize the hydraulic power supply. This will allow the flaring pin and spindle head to retract to their original position.

Step 17: Press the red stop button on the front of the machine to stop rotation of the main spindle head.

Step 18: Rotate clamp vise handle counter-clockwise to loosen clamp from die set and tube and open swing arm to expose die halves.

Step 19: Remove the top half of the die set from the die cavity and set aside.

Step 20: Remove flared tube from bottom half of die set

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37˚ Flaring Information for Triple-Lok Fittings

Step 21: Inspect the flare to ensure proper surface finish. Measure the flare diameter and compare to values in chart below.

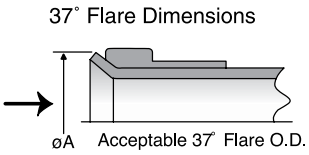
Adjusting the ECO 25 to compensate for over/undersized flare diameters

If the flare diameter of your ECO 25 tube assembly is not within the diameter specifications listed, please complete the following steps:

- First, check to make sure that the correct flaring pin and die set are being used for the outside diameter, wall thickness, and material tubing you are using. Keep in mind that each Die Set can be used with every wall thickness of that size tubing and also with both carbon and stainless steel tubing. However, the flaring pins are specific to the outside diameter and wall thickness of the tubing.
- Once the tooling and tubing have been verified, the correct method of increasing or decreasing the diameter of the tube flare is to alter the flaring pressure used during the flaring process.
- To increase the diameter of a tube flare, repeat the flaring process as before, but utilize a slightly higher flaring pressure than noted in the charge on page 15. Continue this process until the flare diameter is within the specifications listed to the right.
- To decrease the diameter of a tube flare, repeat the flaring process as before, but utilize a slightly lower flaring pressure than noted in the chart on page 15. Continue this process until the flare diameter is within the specifications listed to the right.

Inch Tube O.D. (in.)	Metric Tube O.D. (mm)	37° Flare Diameter ØA (in.)
1/4	6	.340/.360
5/16	8	.400/.430
3/8	10	.460/.490
1/2	12	.630/.660
5/8	15 & 16	.760/.790
3/4	18 & 20	.920/.950
1	25	1.170/1.200
1 1/4	30 & 32	1.480/1.510
1 1/2	38	1.700/1.730

37° Flare Dimensions



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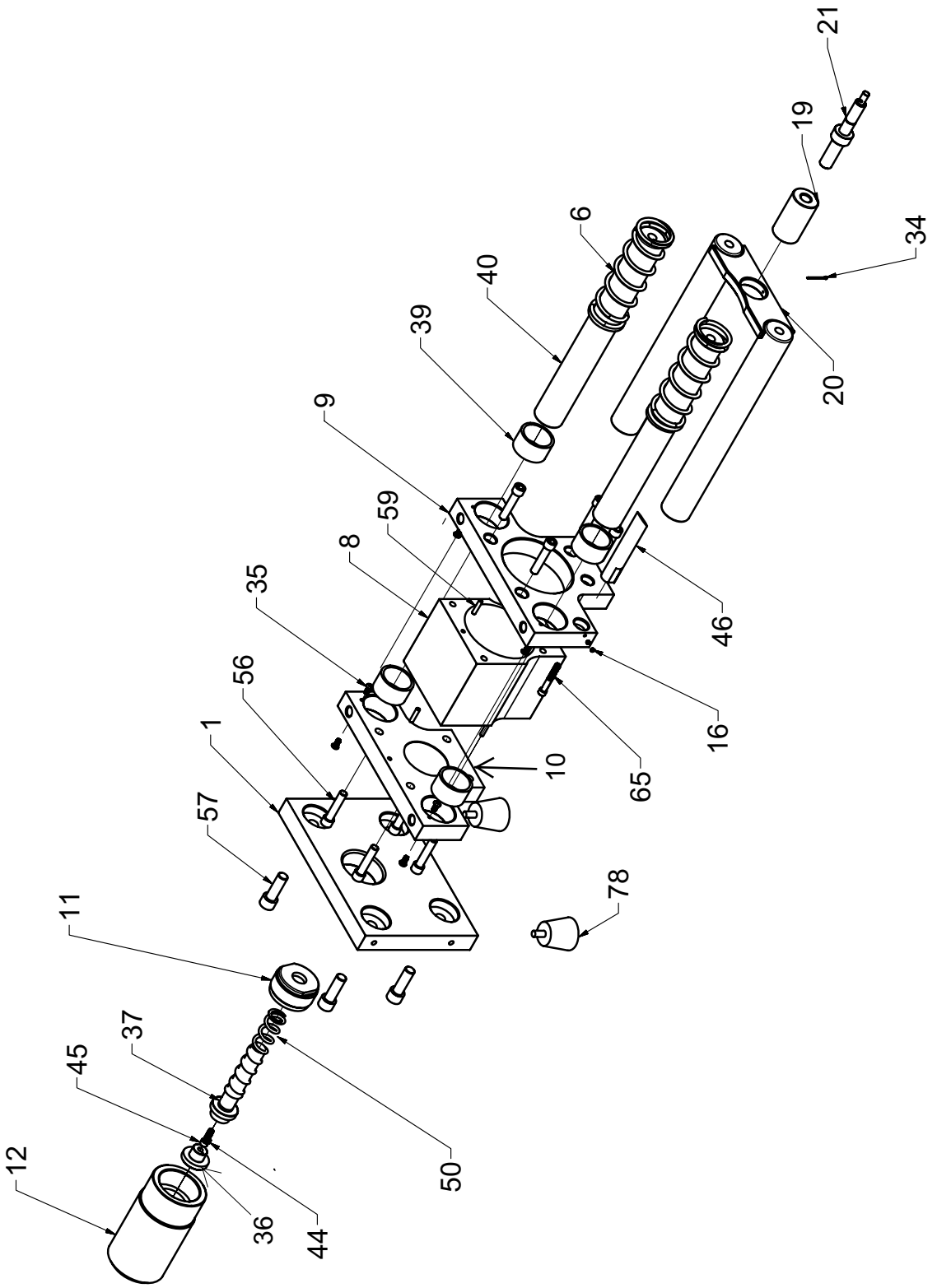
Component Parts Breakdown - ECO 25 Guide Assembly



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Component Parts Breakdown - ECO 25 Guide Assembly Parts List

Item	Qty.	Part Number	Description
1	1	SK112111JW01_02	BACK PLATE
6	2	RETRACTING SPRING	6" LENGTH, 1 15/16" OD, .192" WIRE DIAMETER, SPRING TEMPERED STEEL COMPRESSION SPRING
8	1	SK112111JW03	GUIDE CENTER
9	1	SK112111JW04	GUIDE FRONT
10	1	SK112111JW02	GUIDE REAR
19	1	SK112111JW0501	HEAD STOP
20	1	SK112111JW06	HEAD STOP ARM
21	1	SK072012JW00	THREADED BAR - HEAD STOP
39	4	BRONZE BUSHING	SAE 863 BRONZE SLEEVE BEARING FOR 1 1/2" SHAFT DIAMETER, 1 3/4" OD, 1" LENGTH
40	4	GUIDE RAIL	1 1/2" DIAMETER 12 1/2" LONG DIE POST 1/2"-20 UNF-2B THREAD 1" DEPTH DRILLED ON CENTER BOTH ENDS
46	1	SK080212RH00	TUBE STOP FORCE ROD
56	8	GUIDE REAR-FRONT BOLT	3/8"-16 X 1 3/4" BLACK OXIDE ALLOY STEEL SOCKET CAP SCREW GRADE 8
57	4	GUIDE RAIL BOLTS	1/2"-20 X 1 1/2" BLACK OXIDE ALLOY STEEL SOCKET CAP SCREW GRADE 8
65	1	TUBE STOP FORCE ROD BOLT	
78	2	BUMPER FOOT	5/16" -18 X 2.125" HEIGHT
16	2	TUBE STOP FORCE ROD SET SCREW	8-32 X 1/8" LG ALLOY STEEL SET SCREW
34	1	HEAD STOP COTTER PIN	1/16" DIA. 1" LG. STANDARD STEEL COTTER PIN
35	6	BUSHING SCREW	10-32 X 7/16" LG BUTTON HEAD SOCKET CAP SCREW
36	1	SK080312JW00	PISTON CAP
37	1	SK080212JW00	PISTON SHAFT
44	1	PISTON DOWEL PIN	1/8" X 3/8" STEEL DOWEL PIN
45	1	PISTON SCREW	1/4"-20 X 3/4 LG. BLACK OXIDE ALLOY STEEL SOCKET HEAD CAP SCREW
12	1	SK0328201202JW	PISTON CYLINDER
50	1	SK0410201200JW	HYDRAULIC CYLINDER PISTON SPRING
11	1	SK081212EL00	PISTON END PLUG
59	3	GUIDE DOWEL	3/8" DIA. X 7/8" LG. STEEL DOWEL

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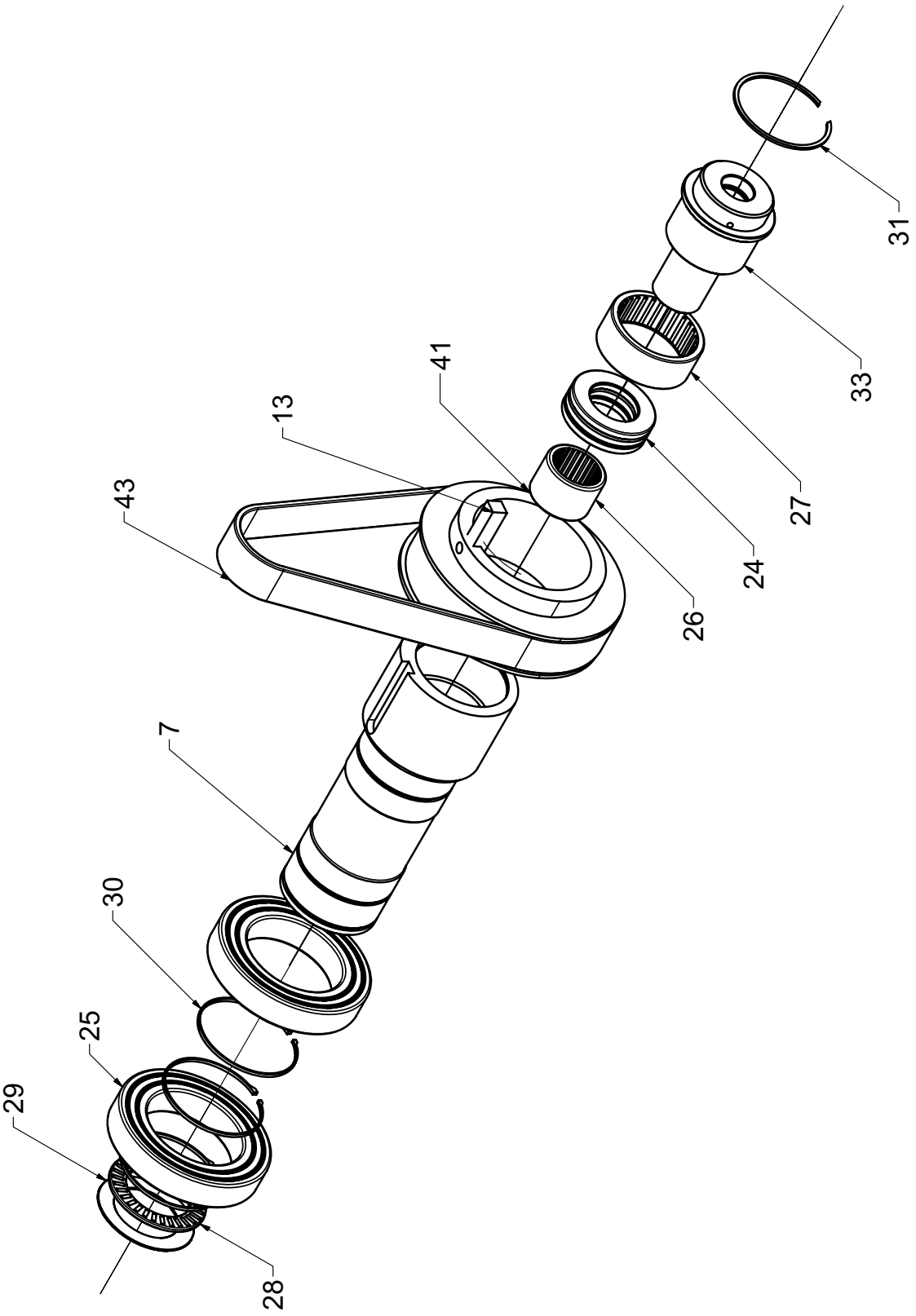
ECO 25 Flare/Flange Head Assembly



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ECO 25 Flare/Flange Head Assembly Parts List

Item	Qty.	Part Number	Description
7	1	SK112311JW0102	FLARE HEAD
13	1	LARGE PULLEY KEY GUIDE	3/8" x 3/8" x 1.850" KEY STOCK
24	1	BEARING SKF 51206	THRUST BALL THRUST BEARING 30MM ID 52MM OD 16MM WIDTH
25	2	BEARING SKF 6012-2RS1	RUBBER SEALED DEEP GROOVE BALL BEARING 60MM ID 95MM OD 18MM WIDTH
26	1	BEARING INA BK3026	BUDGET BK DRAWIN CUP TYPE NEEDLE ROLLER BEARINGS 30MM ID 37MM OD 26MM WIDTH
27	1	BEARING INA HK5022	DRAWN CUP TYPE NEEDLE ROLLER BEARING 50MM ID 58MM OD 22MM WIDTH
28	1	BEARING TORRINGTON FNT-4060	NEEDLE ROLLER CAGE 40MM ID 60MMOD 3MM WIDTH
29	1	THRUST WASHER TORRINGTON FTRA-4060	THRUST WASHER 40MM ID 60MM OD 1MM WIDTH
30	3	OUTER CIRCLIP	BLACK FINISH STEEL EXTERNAL RETAINING RING FOR 2 5/16" SHAFT DIAMETER
31	1	BR 58 BORE STOP RING	LIGHT DUTY SPIRAL EXTERNAL RETAINING RING STEEL FOR 1 3/4" SHAFT DIAMETER
33	1	SK112311JW02	HEAD PIN HOLDER
41	1	SK080712JW00	LARGE PULLEY
43	1	PULLEY BELT	3/8" L PITCH; 24" PITCH LENGTH; 1" BELT WIDTH; 64 TEETH; SINGLE SIDED

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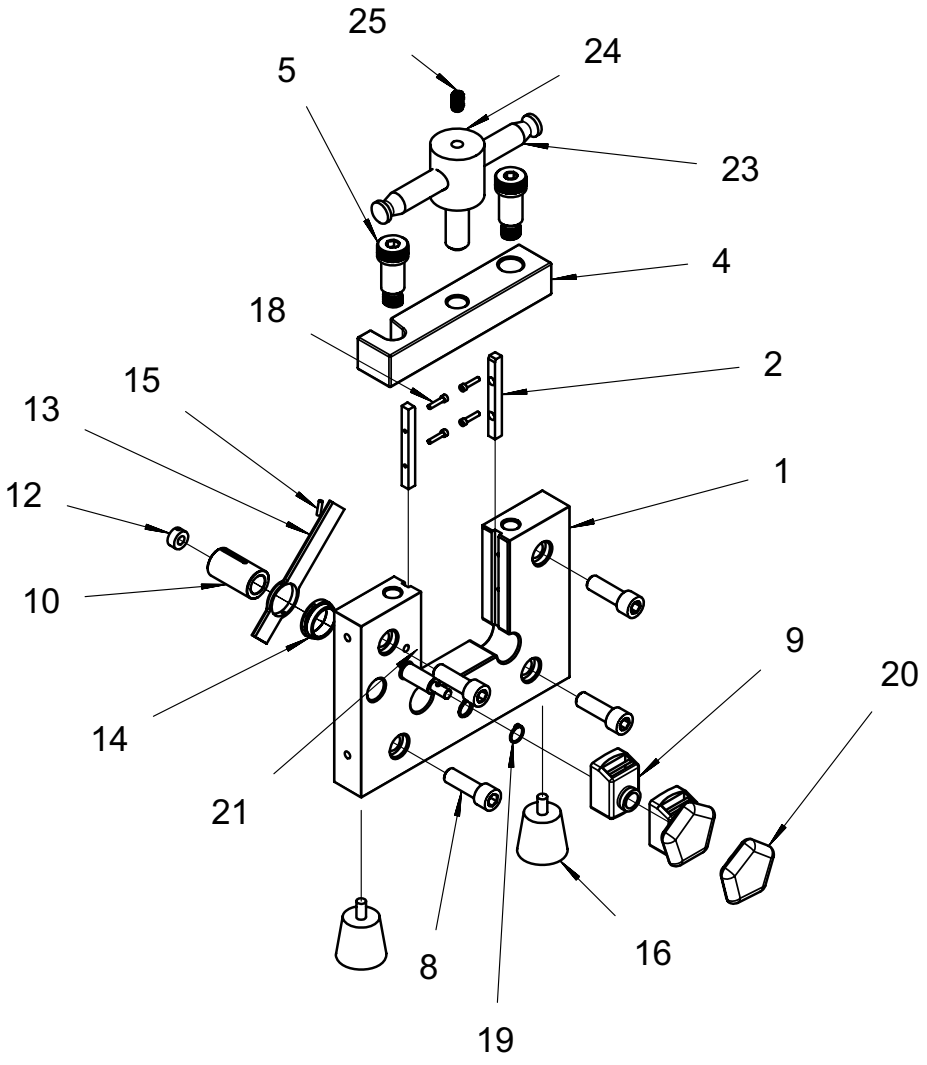
Component Parts Breakdown - ECO 25 Die Holder Assembly



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Component Parts Breakdown
ECO 25 Die Holder Assembly Parts List

Item	Qty.	Part Number	Description
1	1	SK112411JW02_02	FRONT PLATE
2	2	KEY GUIDE	5/16" X 5/16" X 3.138" LONG KEY STOCK
4	1	SK112411JW01	SWING
5	2	SWING BOLTS	ALLOY STEEL SHOULDER SCREW, 3/4" SHOULDER DIAMETER, 1 1/4 L SHOULDER, 5/8-11 THREAD
8	4	GUIDE RAIL BOLTS	1/2"-20 X 1 1/2" BLACK OXIDE ALLOY STEEL SOCKET CAP SCREW GRADE 8
9	2	POSITION INDICATOR	4 DIGIT POSITION INDICATOR
10	1	SK041712JW02	TUBE STOP GUIDE POST
12	1	SK041712JW03	TUBE STOP SLIDER NUT
13	1	SK041712JW00	TUBE STOP PLATE
14	1	SK041712JW01	TUBE STOP COLLAR
15	1	TUBE STOP SET SCREW	5-40 UNC-2A X 0.5" LONG SET SCREW
16	2	BUMPER FOOT	5/16" -18 X 2.125" HEIGHT
18	4	KEY GUIDE IDLER MOUNT BOLTS	#6-32 X 5/8" BLACK OXIDE ALLOY STEEL SOCKET CAP SCREW GRADE 8
19	2	THREADED BAR CLIP	9/16" EXTERNAL RETAINING RING
20	2	STAR KNOB HANDLE	REFERENCE FASTENAL PN 11101409
21	1	THREADED BAR - TUBE STOP	TUBE STOP ADJUSTMENT SCREW
23	1	DIE VICE GRIP HANDLE	DIE VICE GRIP HANDLE
24	1	DIE VICE GRIP BOLT	DIE VICE GRIP BOLT
25	1	BALL PLUNGER	REFERENCE CARRLANE PN CL-60-BP-3

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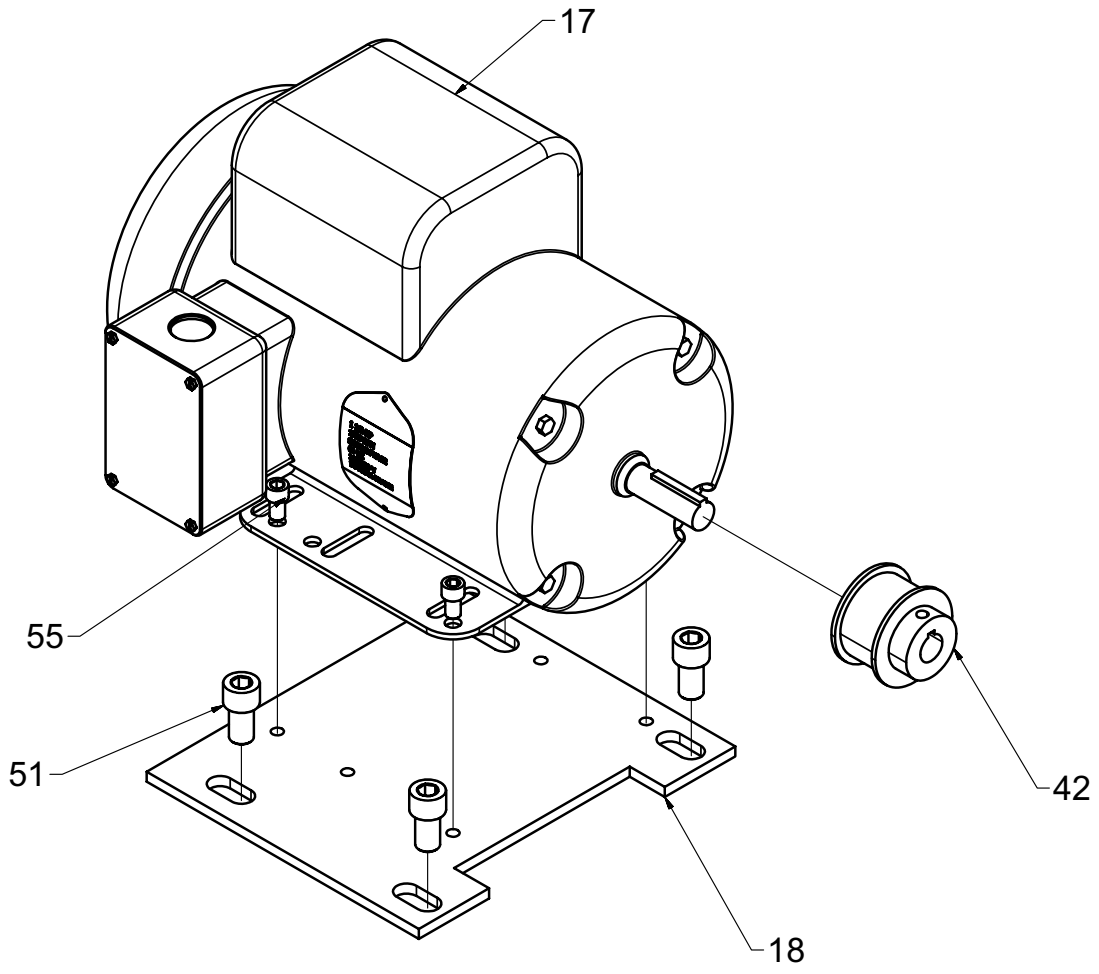
Component Parts Breakdown - ECO 25 Motor Assembly



Component Parts Breakdown - ECO 25 Motor Assembly Parts List

Item	Qty.	Part Number	Description
17	1	MOTOR	NEMA 56 FRAME, 1.5 HP, 1725 RM, 115/230V, SINGLE PHASE 60 HZ E-MOTOR
18	1	SK112211JW01_02	MOTOR PLATE
42	1	SMALL PULLEY	3/8" PITCH; L BELT SIZE; 1" BELT WIDTH; 14 TEETH; 1.671" PITCH DIAMETER; 5/8" FINISHED BORE
51	4	MOTOR MOUNT2GUIDE BOLTS	1/2"-20 X 7/8" BLACK OXIDE ALLOY STEEL SOCKET CAP SCREW GRADE 8
55	3	MOTOR, HEAD STOP MOUNT BOLTS	5/16"-24 X 1/2" BLACK OXIDE ALLOY STEEL SOCKET CAP SCREW GRADE 8

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10. **Buyer's Obligation; Rights of Seller.** To secure payment of all sums due or otherwise, Seller shall retain a security interest in the goods delivered and this agreement shall be deemed a Security Agreement under the Uniform Commercial Code. Buyer authorizes Seller as its attorney to execute and file on Buyer's behalf all documents Seller deems necessary to perfect its security interest.

11. **Improper use and Indemnity.** Buyer shall indemnify, defend, and hold Seller harmless from any claim, liability, damages, lawsuits, and costs (including attorney fees), whether for personal injury, property damage, patent, trademark or copyright infringement or any other claim, brought by or incurred by Buyer, Buyer's employees, or any other person, arising out of: (a) improper selection, improper application or other misuse of Products purchased by Buyer from Seller; (b) any act or omission, negligent or otherwise, of Buyer; (c) Seller's use of patterns, plans, drawings, or specifications furnished by Buyer to manufacture Product; or (d) Buyer's failure to comply with these terms and conditions. Seller shall not indemnify Buyer under any circumstance except as otherwise provided.

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Offer of Sale

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19. Entire Agreement. This agreement contains the entire agreement between the Buyer and Seller and constitutes the final, complete and exclusive expression of the terms of sale. All prior or contemporaneous written or oral agreements or negotiations with respect to the subject matter are herein merged.

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